

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application	: 10/628,942	Confirmation	: 9092
Applicant(s)	: van GORKOM	T.C./Art Unit	: 2676
Filed	: 29 Jul 2003	Examiner	: MONESTIME, Mackly
		Atty. Docket	: N-16984A

Title: **DISPLAY DEVICE COMPRISING A LIGHT GUIDE**

Mail Stop: **APPEAL BRIEF - PATENTS**
Commissioner for Patents
Alexandria, VA 22313-1450

APPEAL UNDER 37 CFR 41.37

Sir:

This is an appeal from the decision of the Examiner dated 19 April 2006, finally rejecting claims 1-5 and 8-22 of the subject application.

This paper includes (each beginning on a separate sheet):

- 1. Appeal Brief, with appendices; and**
- 2. Authorization to charge Deposit Account in the amount of \$500.**

APPEAL BRIEF

I. REAL PARTY IN INTEREST

The above-identified application is assigned, in its entirety, to
Koninklijke Philips Electronics N. V.

II. RELATED APPEALS AND INTERFERENCES

Appellant is not aware of any co-pending appeal or interference that will directly affect, or be directly affected by, or have any bearing on, the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

Claims 6-7 are canceled.

Claims 1-5 and 8-22 are pending in the application.

Claims 19 and 21 stand rejected by the Examiner under 35 U.S.C. 102(b).

Claims 1-5, 8-18, 20, and 22 stand rejected by the Examiner under 35 U.S.C. 103(a).

These rejected claims are the subject of this appeal.

IV. STATUS OF AMENDMENTS

No amendments were filed subsequent to the final rejection in the Office Action dated 19 April 2006. A reply to the final rejection was filed on 8 June 2006.

V. SUMMARY OF CLAIMED SUBJECT MATTER

This invention relates to a display device that provides an image by selectively coupling movable elements to a light guide, and specifically to techniques for improving the performance of such a device. To assure a rapid and accurate selective contact, the forces that tend to inhibit movement of the movable elements are minimized; these forces include the adhesive forces that tend to hold the movable elements in contact with other elements, and the atmospheric forces that build in the chambers above and below the movable elements (Applicant's Abstract).

As claimed in independent claim 1, the invention comprises a display device (FIG. 1) that includes:

- a light guide (2 of FIGs. 1 and 2);
 - a movable element (3); and
 - selection means (5,6) to locally bring the movable element into contact with the light guide (page 5, lines 1-10; FIG. 2);
- wherein the movable element is situated in an evacuated space below 0.1 atmosphere (page 2, lines 13-16; page 8, lines 3-13).

As claimed in independent claim 2, the invention comprises a display device (FIG. 1) that includes:

- a light guide (2 of FIGs. 1 and 2);
 - a movable element (3); and
 - selection means (5, 6) to locally bring the movable element into contact with the light guide (page 5, lines 1-10; FIG. 2),
- wherein the selection means comprise transparent electrodes and, in operation, the movable element, provided that it is in contact with the light guide, contacts the light guide at the location of an electrode, thus causing light to be emitted through the transparent electrode (page 6, line 31 – page 7, line 2; page 8, lines 15-25).

As claimed in independent claim 19, the invention comprises a display device (FIG. 1) that includes:

- a light guide (2 of FIGs. 1, 2, and 5);
 - a movable element (3); and
 - selection means to locally bring the movable element into contact with the light guide (page 5, lines 1-10; FIG. 2),
- wherein at least one of the movable element and the light guide is provided with an anti-adhesion layer (52 of FIG. 5) on the side at which the contact is made between the movable element and the light guide (page 8, lines 24-26).

As claimed in dependent claim 21, the invention comprises the display device of claims 19 and 20, wherein the movable element is electrically conducting and at a fixed potential (page 8, lines 14-21).

As claimed in dependent claim 22, the invention comprises the display device of claim 21, wherein the movable element is situated in an evacuated space that is below 0.1 atmosphere (page 2, lines 13-16; page 8, lines 3-13).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Claims 19 and 21 stand rejected under 35 U.S.C. 102(b) over Stern (USP 5,771,321).

Claims 1, 3, 5, 10-11, 13-15, and 22 stand rejected under 35 U.S.C. 103(a) over Stern.

Claims 2, 4, 8-9, 12, 16-18, and 20 stand rejected under 35 U.S.C. 103(a) over Stern and Adachi et al. (USP 5,631,664, hereinafter Adachi).

VII. ARGUMENT

Claims 19 and 21 stand rejected under 35 U.S.C. 102(b) over Stern

MPEP 2131 states:

"A claim is anticipated only if *each and every element* as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The *identical invention* must be shown in as *complete detail* as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Claims 19 and 21

Claim 19, upon which claim 21 depends, claims a display device that includes a light guide and a movable element, wherein the movable element or the light guide is provided with an anti-adhesion layer on the side at which the contact is made between the movable element and the light guide.

Stern fails to teach an anti-adhesion layer on a side at which contact is made between a movable element and a light guide.

Stern teaches a display device that includes a movable element and a light guide, and specifically teaches techniques to increase the adhesion between the movable element and the light guide:

"Here a layer of excess charge 66 is embedded in the upper surface of the light storage plate. As explained in detail below, such a charge layer can be produced by, e.g., ion-implantation of a light storage plate material such as a transparent form of teflon or an oxide such as silicon dioxide. In, e.g., a normally "on" geometry, the embedded electret produces corresponding attractive image charge in the tap beam electrode 47, resulting in a constant electrostatic downward force on the tap beam, holding the beam in contact with the top surface 34 of the light storage plate mesa 26." (Stern, column 13, lines 32-42.)

The Office action cites a portion of the above text and asserts that this ion-implanted layer corresponds to the applicant's claimed anti-adhesion layer. The applicant respectfully disagrees with this assertion. The applicant maintains that Stern's layer of material that is provided to facilitate "holding the beam in contact" cannot be said to correspond to an anti-adhesion layer.

In the alternative, the Office action asserts that Stern's stand-off elements 54 are equivalent to the claimed anti-adhesion layer. Stern teaches that these stand-off elements 54 are designed to suppress Van der Waals contact forces. The applicant respectfully notes that these discrete elements 54 do not form an anti-adhesion layer, as the term "layer" is conventionally interpreted, and as the term is used in the applicant's specification. The applicant notes that Stern repeatedly notes that these stand-off elements 54 should be of minimal height, and, in view of the fact that Stern specifically teaches an ion-implantation layer that is designed to increase the adhesion between the movable element and the light guide, the applicant respectfully maintains that one of ordinary skill in the art would interpret Stern as teaching an anti-adhesion layer.

Because Stern does not teach an anti-adhesion layer on a side at which contact is made between a movable element and a light guide, as specifically claimed in claim 19, and because Stern specifically teaches an adhesion layer, the

applicant respectfully maintains that the rejection of claims 19 and 21 under 35 U.S.C. 102(b) over Stern is unfounded, per MPEP 2131.

Claim 21

Claim 21 is dependent upon claim 20. The Office action does not assert that Stern teaches the elements of claim 20, and thus fails to show that Stern teaches each of the elements of claim 21.

Because the Office action fails to show that Stern teaches each of the limitations of claim 21, the applicant respectfully maintains that the rejection of claim 21 under 35 U.S.C. 102(b) over Stern is unfounded, per MPEP 2131.

Claims 1, 3, 5, 10-11, 13-15, and 22 stand rejected under 35 U.S.C. 103(a) over Stern

MPEP 2142 states:

"To establish a *prima facie* case of obviousness ... the prior art reference (or references when combined) *must teach or suggest all the claim limitations*... If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness."

Claims 1, 3, 5, 10-11, and 13-15

Claim 1, upon which claims 3, 5, and 10-15 depend, claims a display device that includes a light guide and a movable element, wherein the movable element is situated in an evacuated space below 0.1 atmosphere.

Stern fails to teach or suggest a movable element that is situated in an evacuated space below 0.1 atmosphere.

Stern teaches providing holes in a movable element (a 'tap beam') to equalize the pressure in the space above and below the tap beam of a display device.

The Office action acknowledges that Stern's "holes are preferably of such a small size in relation to the overall tap beam size that they do not impact the mechanical properties of the tap beam." However, the Office action asserts that, based on this teaching: "In other words, there is no air being trapped in the space so

that the air space between the light guide and the moveable member would be maintained in a low-pressure condition." (Office action, page 3, second paragraph.)

The applicant agrees that Stern provides holes in the tap beam, but respectfully disagrees with the erroneous assertion that providing holes in a surface will result in a low-pressure condition. If the holes in the movable element are sufficiently sized, a minimal pressure differential will exist between the regions above and below the movable element, but this minimal pressure differential is unrelated to the actual pressure within the cavities above and below the movable element.

Stern is silent with regard to the actual pressure within the space that encloses the moveable member, and the applicant respectfully notes that if the space that encloses the moveable member is evacuated, there would be no need to provide holes through the moveable member.

Because Stern does not teach or suggest evacuating the space in which the moveable member is situated, and because such evacuation would eliminate the need for Stern's teaching of holes within the moveable member, the applicant respectfully maintains that the rejection of claims 1, 3, 5, 10-11, and 13-15 under 35 U.S.C. 103(a) over Stern is unfounded, per MPEP 2142..

Claim 22

Claim 22 is dependent upon each of claims 19, 20, and 21.

The Office action does not assert or show that Stern teaches the elements of claim 20, and thus fails to establish a prima facie case of obviousness of claim 22 under 35 U.S.C. 103(a) over Stern. Therefore, the applicant respectfully maintains that the rejection of claim 22 under 35 U.S.C. 103(a) over Stern is unfounded, per MPEP 2142.

**Claims 2, 4, 8-9, 12, 16-18, and 20 stand rejected
under 35 U.S.C. 103(a) over Stern and Adachi**

MPEP 2143 states:

"THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION ... The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). ... The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)".

Claims 2, 4, 8-9, 12, 16-18, and 20

Claim 2, upon which each of these rejected claims depend, claims a display device that includes a light guide and a movable element, wherein the selection means comprise transparent electrodes and, in operation, the movable element, provided that it is in contact with the light guide, contacts the light guide at the location of an electrode, thus causing light to be emitted through the transparent electrode.

The Office action relies upon Stern for teaching a display device that includes a light guide and moveable element, and relies upon Adachi for teaching transparent electrodes. The Office action fails to address the limitation that the claimed display device is structured to provide contact to the light guide at the location of the electrode.

The Office action asserts that one of ordinary skill in the art would modify Stern to use the transparent electrodes of Adachi "so that the transparent electrodes can be placed on the surface of the movable element at the light emitted portion without blocking the light." The applicant respectfully maintains that the Examiner is using impermissible hindsight reconstruction to create the applicant's invention from the independent teachings of Stern and Adachi.

Stern teaches a display that uses movable elements that contact a light guide to create an image. Adachi teaches a display that uses polarization reversal of ferroelectric material to create an image. Because the operation of Adachi's device requires a 'sandwich' of a ferroelectric thin film, a multiplication layer, and a light emitting layer between two electrodes that provide the multiplication, at least one of

the electrodes that sandwich the light emitting layer must be transparent. A sandwich structure is not required in a 'mechanical' embodiment, such as Stern's, and a transparent electrode is not required.

Stern teaches a light guide with a movable element and opaque selection means that are located at the periphery of the light propagation path. There is no suggestion in Stern to use transparent electrodes, or to change the placement of the electrodes to the center of the pixel. The mere fact that Adachi's transparent electrodes can be used to replace Stern's electrodes does not render the combination obvious, and does not lead to the applicant's claimed invention. Neither Stern nor Adachi suggests the desirability of this combination, and Stern specifically teaches electrodes on the periphery of the light propagation path.

In each of the variety of embodiments taught by Stern (FIGs. 3A-C, 4A-E, 5, 11, 18F-G), an unobstructed light path is created by avoiding the placement of the electrodes that provide the movement of the tap beam in the region at which the tap beam contacts the light-storing plate. In the example embodiments of FIGs 11 and 18F-G that illustrate electrodes traversing the pixel regions, Stern specifically teaches creating voids (80, 82, 318) in the electrodes to provide an unobstructed light path. Stern does not identify or suggest any deficiencies in this design that would suggest placing electrode material in the light path. Further, the placement of an electrode at the region at which the tap beam contacts the light-storing plate will adversely affect the mechanical flexibility of Stern's tap beam, and will adversely affect the light-transmission qualities of Stern's display. Therefore, an assertion that placing transparent electrodes at each light-contacting point in Stern is either obvious or desirable is unfounded.

Because neither Stern nor Adachi teach or suggest a display device with transparent movement-activating electrodes, and because there is no suggestion in either Stern or Adachi to provide a combination that includes transparent movement-activating electrodes, and because the combination is not obviously desirable, the applicant respectfully maintains that the rejection of claims 2, 4, 8-9, 12, 16-18, and 20 under 35 U.S.C. 103(a) over Stern and Adachi is unfounded, per MPEP 2142 and 2143.

CONCLUSIONS

Because Stern fails to teach or suggest evacuating the space in which the moveable member is situated, and because Stern specifically teaches creating holes in the moveable member to facilitate movement in a non-evacuated space, the applicant respectfully requests that the Examiner's rejection of claims 1, 3, 5, 10-11, and 13-15 under 35 U.S.C. 103(a) over Stern be reversed by the Board, and the claims be allowed to pass to issue.

Because the Office action fails to show that Stern teaches each of the elements of claim 22, the applicant respectfully requests that the Examiner's rejection of claim 22 under 35 U.S.C. 103(a) over Stern be reversed by the Board, and the claims be allowed to pass to issue.

Because neither Stern nor Adachi teaches a movable element with a transparent electrode at a point of contact with a light source, and because Stern specifically teaches opaque electrodes at the periphery of the contact point with the light source, the applicant respectfully requests that the Examiner's rejection of claims 2, 4, 8-9, 12, 16-18, and 20 under 35 U.S.C. 103(a) over Stern be reversed by the Board, and the claims be allowed to pass to issue.

Because Stern fails to teach an anti-adhesion layer between the movable element and the light source, the applicant respectfully requests that the Examiner's rejection of claims 19 and 21 under 35 U.S.C. 102(b) over Stern be reversed by the Board, and the claims be allowed to pass to issue.

Because the Office action fails to show that Stern teaches each of the elements of claims 21 and 22, the applicant respectfully requests that the Examiner's rejections of claim 21 under 35 U.S.C. 102(b) and claim 22 under 35 U.S.C. 103(a) over Stern be reversed by the Board, and the claims be allowed to pass to issue.

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Respectfully submitted



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CLAIMS APPENDIX

1. A display device comprising:

a light guide;

a movable element; and

selection means to locally bring the movable element into contact with the light guide;

wherein the movable element is situated in an evacuated space below 0.1 atmosphere.

2. A display device comprising:

a light guide;

a movable element; and

selection means to locally bring the movable element into contact with the light guide,

wherein the selection means comprise transparent electrodes and, in operation, the movable element, provided that it is in contact with the light guide, contacts the light guide at the location of an electrode, thus causing light to be emitted through the transparent electrode.

3. The display device of claim 1, wherein the movable element comprises means for removing a static charge from the movable element.

4. The display device of claim 2, wherein the movable element is electrically conducting and at a fixed potential.

5. The display device of claim 1, wherein the movable element is provided with an anti-adhesion layer on the side facing the light guide and/or the light guide is provided with an anti-adhesion layer on the side facing the movable element.

6-7 (Canceled)

8. The display device of claim 2, wherein there is no liquid between the movable element and the light guide.

9. The display device of claim 2, wherein the movable element is situated in an evacuated space below 0.1 atmosphere.

10. The display device of claim 1, wherein the movable element is arranged between the light guide and a further element, and the selection means comprise means for locally generating a force causing the movable element to move towards the light guide as well as a force causing the movable element to move towards the further element.

11. The display device of claim 1, wherein the evacuated space is below 10 Torr.

12. The display device of claim 1, wherein the selection means includes transparent electrodes and, in operation, the movable element, provided that it is in contact with the light guide, contacts the light guide at the location of an electrode, thus causing light to be emitted through the transparent electrode.

13. The display device of claim 1, wherein the movable element is electrically conducting and at a fixed potential.

14. The display device of claim 1, wherein the movable element is provided with an anti-adhesion layer on the side facing the light guide and/or the light guide is provided with an anti-adhesion layer on the side facing the movable element.

15. The display device of claim 1, wherein a surface of the movable element facing the light guide is a same material as a surface of the light guide facing the movable element.

16. The display device of claim 2, wherein the movable element is arranged between the light guide and a further element, and the selection means comprise means for locally generating a force causing the movable element to move towards the light guide as well as a force causing the movable element to move towards the further element.

17. The display device of claim 2, wherein a surface of the movable element facing the light guide is a same material as a surface of the light guide facing the movable element.

18. The display device of claim 9, wherein the evacuated space is below 10 Torr.

19. A display device comprising:

- a light guide;

- a movable element; and

- selection means to locally bring the movable element into contact with the light guide,

- wherein at least one of the movable element and the light guide is provided with an anti-adhesion layer on the side at which the contact is made between the movable element and the light guide.

20. The display device of claim 19, wherein at least one of the first and second electrodes is substantially transparent.

21. The display device of claim 20, wherein the movable element is electrically conducting and at a fixed potential.

22. The display device of claim 21, wherein the movable element is situated in an evacuated space that is below 0.1 atmosphere.

EVIDENCE APPENDIX

No evidence has been submitted that is relied upon by the appellant in this appeal.

RELATED PROCEEDINGS APPENDIX

Appellant is not aware of any co-pending appeal or interference which will directly affect or be directly affected by or have any bearing on the Board's decision in the pending appeal.